

SMOKE TRANSPORT AND DISPERSION FROM PRESCRIBED BURNS: COMPLICATIONS POSED BY MOUNTAINOUS TERRAIN

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ABSTRACT

We ran the MM5 meso-meteorological weather model for the southern Appalachian Mountains near the Tennessee/North Carolina border for 18 March 2006. On this day a smoke plume from a prescribed burn in eastern Tennessee collapsed over North Carolina, causing hazardous air quality over Asheville about 50 km away. We mapped the mixing height for each hour during the burn. We found complex mixing height patterns formed from local heating and advection. The mountains impact the height of the boundary layer not only over high terrain but also over lowlands downwind. These results could change land management practices near mountainous terrain.

Keywords: mixing height, plume collapse, smoke dispersion.

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